From: "Frederick Sweeney" <fsweeney@firemarshals.org>
To: <wtc@nist.gov>
Cc: <mklein@firemarshals.org>
Subject:

Mr. Cauffman:

I am submitting the attached document (NIST WTC Comments Final 8.4.05) on behalf of the National Association of State Fire Marshals. It summarizes our comments/recommendations pertaining to NIST's reports on the Federal Building and Fire Safety Investigation of the World Trade Center Disaster. This e-mail also includes two attachments (503 and Attachment to 503) mentioned in our public comment.

Thank You,
Ray Sweeney
Government Relations
National Association of State Fire Marshals
1319 F Street, NW Ste. 301
Washington, DC 20004
Tel: (202) 737-1226 ext. 21
Fax: (202) 393-1296
Email: fsweeney@firemarshals.org

 NIST WTC Comments Final 8.4.05.pdf

 503.pdf

 Attachment to 503.pdf

NFPA RESPONSE TO NIST WTC STUDY

NFPA is pleased with both the content and direction that the WTC Study has taken in the past 3 years. It has been no easy task to reconstruct the complex sequence of events that caused the loss of multiple structures at the WTC site on September 11, 2001. While it is easy to over simplify the events of that day (aircraft impact → initial structural damage → dislodged fire proofing → thermal degradation/failure → progressive collapse), it simply isn't good enough to "Monday morning quarterback" such a loss based on intuition and pictures from the media.

The wide range of recommendations, while somewhat daunting, are appropriate for the design, engineering and construction communities to look at. NFPA may not agree with all of the recommendations, (for example...), but we are committed none-the-less to review, study and provide meaningful comments back to NIST. We truly believe that the majority of these recommendations are appropriate, one way or another, in the NFPA Codes and Standards.

The recommendations from NIST are likely to have some level of impact on numerous NFPA Codes and Standards including:

NFPA 1, *Uniform Fire Code*

NFPA 13, *Installation of Sprinkler Systems*

NFPA 14, *Standard for the Installation of Standpipe and Hose Systems*

NFPA 20, *Standard for the Installation of Stationary Fire Pumps for Fire Protection*

NFPA 30, *Flammable & Combustible Liquids Code*

NFPA 37, *Standard for the Installation and Use of Stationary Combustion Engines and Gas Turbines*

NFPA 70, *National Electrical Code*

NFPA 72, *National Fire Alarm Code*

NFPA 101, *Life Safety Code*

NFPA 110, *Standard for Emergency and Standby Power Systems*

NFPA 220, *Standard on Types of Building Construction*

NFPA 221, *Standard for Fire Walls and Fire Barrier Walls*

NFPA 251, *Standard Methods of Tests of Fire Endurance of Building Construction and Materials*

NFPA 5000, *Building Construction and Safety Code*

While the recommendations are fairly definitive, some will require further study; some will require additional research; and some are already at various stages of completion by NFPA. Among those changes are:

COMPLETED:

NFPA 5000, *Building Construction and Safety Code* already contains a requirement for 4 hour protection of key structural components for buildings in excess of 420 feet in height. This change, made and accepted in the first edition of the Code in 2002 is providing an additional robustness to structural members in certain categories of tall buildings – that is, those in excess of 40 stories.

NEAR TERM COMPLETION: (2-6 Months)

- New Minimum Stair/Door Widths. The 2006 editions of **NFPA 101,** *Life Safety Code* and **NFPA 5000,** *Building Construction and Safety Code* have been revised to require wider stair widths under select conditions. Stair widths that serve an accumulated population of 2000 or more occupants will be required to be a minimum of 56 inches in width. The current minimum is 44 inches. This change will reduce stair congestion and its related slowing of evacuation speed and will improve counter flow issues between building occupants and first responders. A related change will also require that exit discharge doors serving such stairs be sized at 2/3^{rds} of the nominal width of the stair (i.e. 37(+) inches).

- Establish Performance Requirements for Emergency Escape Devices.

  The 2006 editions of NFPA 101 and NFPA 5000 have been revised to establish a recognition of those devices. The Codes will NOT mandate the use of such devices nor will the codes give any credit to the installation of such devices. We have seen an increase in the awareness (and use) of this equipment in the last few years. At present, there is absolutely no regulation of these systems. The basic first step in the process is to at least establish some level of performance under various use conditions.

- Stair Descent Device – NFPA 101 and NFPA 5000 will mandate placement of stair descent devices for buildings designed with 44 inch wide stairs. One chair per floor will be required with another device required at a rate of 1 per every 200 occupants.

Long Term Completion (12-19 Months)

- **NFPA 557,** *Standard on Fire Exposure for Engineering Design of Structural Fire Resistance in Buildings.*

  This proposed new document will allow for fuller evaluation and analysis of building performance under fire conditions – especially as it relates to performance – based design.

- Emergency Evacuation Elevator Systems (EEES)

  This effort is well underway in multiple areas. NFPA staff have been active with both the NIST/ASME activity in this area as well as with the CTBUH project in this area.

- Evaluation of Fire Test Protocols

  While the testing procedures for determining hourly fire resistance ratings of structural members has largely remained unchanged for decades, those test procedures continue to serve the design and construction industry very well. That is not to say, however, that there isn't a need to review the procedures, and look at items such as restrained and unrestrained connections.